

$$d. y = ab^x$$

$$\begin{cases} 10 = ab^2 \\ 6 = ab^5 \end{cases}$$

$$\frac{6}{10} = \frac{ab^5}{ab^2}$$

$$0.6 = b^3$$

$$0.6^{1/3} = b$$

$$b = 0.8434\dots$$

$$10 = a(0.8434\dots)^2$$

$$a = 14.0572\dots$$

$$\therefore y = 14.0572\dots (0.8434\dots)^x \quad \text{Write the particular equation.}$$

- e. Plotting the graph confirms that the equation is correct. Note that the value of  $b$  is between 0 and 1, which corresponds to the fact that the function is decreasing.

Write the untranslated general equation.

Substitute the given  $x$ - and  $y$ -values.

Divide the second equation by the first to eliminate  $a$ .

Raise both sides to the  $\frac{1}{3}$  power to eliminate the exponent of  $b$ .

Store without rounding.

Substitute 0.8434... for  $b$  in one of the equations.

Store without rounding.

## Problem Set 2-2



### Reading Analysis

From what you have read in this section, what do you consider to be the main idea? What is the difference between the parent quadratic function and any other quadratic function? How does the  $y$ -intercept of an exponential function differ from the  $y$ -intercept of a power function? Sketch the graph of a function that is increasing but concave down.



### Quick Review

- Q1. If  $f(x) = x^2$ , find  $f(3)$ .
- Q2. If  $f(x) = x^2$ , find  $f(0)$ .
- Q3. If  $f(x) = x^2$ , find  $f(-3)$ .
- Q4. If  $g(x) = 2^x$ , find  $g(3)$ .
- Q5. If  $g(x) = 2^x$ , find  $g(0)$ .
- Q6. If  $g(x) = 2^x$ , find  $g(-3)$ .
- Q7. If  $h(x) = x^{1/2}$ , find  $h(25)$ .
- Q8. If  $h(x) = x^{1/2}$ , find  $h(0)$ .
- Q9. If  $h(x) = x^{1/2}$ , find  $h(-9)$ .

- Q10. What property of real numbers is illustrated by  $3(x + 5) = 3(5 + x)$ ?

- A. Associative property of multiplication
- B. Commutative property of multiplication
- C. Associative property of addition
- D. Commutative property of addition
- E. Distributive property of multiplication over addition

1. Power functions and exponential functions both have exponents. What major algebraic difference distinguishes these two types of functions?
2. What graphical feature do quadratic functions have that linear, exponential, and power functions do not have?
3. Write a sentence or two giving the origin of the word concave and explaining how the word applies to graphs of functions.